

CLAIMS

What is claimed is:

1. A method of detecting fraud in a fuel dispenser, wherein the fraud comprises reporting an amount of fuel differing from the amount of fuel actually dispensed in a fueling transaction, said method comprising:

a) reporting an amount of fuel alleged to be dispensed on the fuel dispenser to create a reported amount;

b) comparing the reported amount to a reference related to a flow rate of the fuel dispensed during the fueling transaction; and

c) determining if the reported amount is within a confidence interval of said reference to estimate a likelihood that the reported amount differs from the amount of fuel actually dispensed.

2. The method of claim 1 wherein the step of comparing the reported amount to a reference comprises calculating said reference by analyzing the flow rate of the fuel dispensed during the fueling transaction.

3. The method of claim 1 wherein the step of comparing the reported amount to a reference is performed by the fuel dispenser.

4. The method of claim 3 wherein the step of comparing the reported amount to a reference comprises the fuel dispenser comparing the reported amount to historically created data.

5. The method of claim 4 wherein said historically created data is created by averaging data relating to a flow rate of the fuel dispensed over a plurality of fueling transactions.

6. The method of claim 1 wherein the step of comparing the reported amount to a reference is performed by a central station computer.

7. The method of claim 1 wherein the step of comparing the reported amount to a reference is performed by a computer remote from a fueling environment in which the fuel dispenser is located.

8. The method of claim 7 further comprising the fuel dispenser passing data bearing on a flow rate of fuel actually dispensed to said computer remote from the fueling environment together with data bearing on the reported amount such that the computer remote from the fueling environment can perform the step of comparing.

9. The method of claim 2 wherein the step of calculating the reference comprises calculating the reference from historically created data.

10. The method of claim 9 wherein calculating the reference from historically created data comprises collating data from a plurality of fuel dispensers.

11. The method of claim 9 wherein calculating the reference from historically created data comprises collating data from a plurality of fueling environments, each including a plurality of fuel dispensers.

12. The method of claim 9 wherein the step of calculating the reference from historically created data comprises calculating the reference from historically created data generated by at least one fuel dispenser remote from the fuel dispenser.

13. The method of claim 1 further comprising making a plurality of comparisons between the reported amount and a reference generated from a vapor recovery rate during a single fueling transaction.

14. The method of claim 1 further comprising generating an alarm if the step of determining if the reported amount is within a confidence interval estimates that the reported amount differs from the amount of fuel actually dispensed.

15. The method of claim 1 further comprising generating an alarm if the step of comparing fails to be performed due to a failure to report the reference.

16. The method of claim 1 further comprising generating an alarm if the step of comparing fails to be performed due to a failure to report the reported amount.

17. The method of claim 1 further comprising the step of generating data from which the reference can be calculated in a storage tank sensor.

18. The method of claim 1 further comprising the step of generating data from which the reference can be calculated at a position remote from the fuel dispenser.

19. The method of claim 1 further comprising the step of generating data from which the reference can be calculated in the fuel dispenser.

20. The method of claim 1 wherein said reference comprises a maximum allowable flow rate and the step of comparing comprises determining if a flow rate derived from said reported amount exceeds said maximum allowable flow rate.

21. The method of claim 1 wherein reporting an amount of fuel alleged to be dispensed on the fuel dispenser comprises providing an alleged flow rate.

22. A method of detecting fraud in a fueling environment, wherein the fraud comprises reporting on a fuel dispenser an amount of fuel differing from an amount of fuel actually dispensed in a fueling transaction, said method comprising:

a) averaging reported amounts for a plurality of fueling transactions occurring in the fueling environment;

b) reporting the average reported amounts to a computer remote from the fueling environment;

c) comparing the average reported amounts to a reference related to flow rates during fueling transactions; and

d) determining if the average reported amounts are within a confidence interval of said reference to estimate a likelihood that the reported amounts exceed the amount of fuel actually
5 dispensed.

23. The method of claim 22 wherein the step of comparing the average reported amounts to a reference comprises calculating said reference by analyzing flow rates associated with a plurality of fueling transactions.

24. The method of claim 23 wherein the step of comparing the average reported amounts to a reference is performed by a computer remote from the fueling environment.

25. The method of claim 23 wherein the step of calculating the reference comprises calculating the reference from historically created data.
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26. The method of claim 23 further comprising generating an alarm if the fueling environment fails to report the average reported amounts.

20 27. A fuel dispenser configured to detect fraud in a fueling transaction wherein the fraud comprises reporting an amount of fuel differing from the amount of fuel actually dispensed in a fueling transaction, said fuel dispenser comprising:

a) a fuel delivery path to deliver fuel to a vehicle;

b) a user interface for reporting an amount of fuel allegedly dispensed; and

c) a control system for controlling said fuel delivery path, wherein said control system determines a reference from a flow rate associated with the fueling transaction and compares said reference to a reported amount of fuel alleged to be dispensed through the fuel delivery path during the fueling transaction and wherein said control system determines if the reported amount is within a confidence interval of said reference to estimate a likelihood that the reported amount differs from the amount of fuel actually dispensed.

28. The fuel dispenser of claim 27 wherein said user interface is a visual display.

29. The fuel dispenser of claim 27 wherein said user interface is an audio user interface.

30. The fuel dispenser of claim 27 wherein said reference is determined from historically created data.

31. The fuel dispenser of claim 30 wherein said historically created data is accumulated over a plurality of fueling transactions.

32. The fuel dispenser of claim 27 wherein said control system makes a plurality of comparisons during a single fueling transaction between concurrently reported amounts of fuel dispensed and a reference derived from a flow rate associated with the single fueling transaction.

33. The fuel dispenser of claim 27 wherein said control system generates an alarm if said flow rate varies beyond a predetermined acceptable norm within the single fueling transaction.

34. The fuel dispenser of claim 27 wherein said flow rate is calculated remotely from said fuel dispenser.

35. The fuel dispenser of claim 27 wherein said flow rate is calculated at said fuel dispenser.

36. A central station computer configured to detect fraud in a fueling transaction wherein the fraud comprises reporting an amount of fuel differing from the amount of fuel actually dispensed in a fueling transaction, said central station computer configured to:

receive a reported amount of fuel alleged to be dispensed on a fuel dispenser;

compare the reported amount to a reference related to a flow rate associated with the fueling transaction; and

determine if the reported amount is within a confidence interval of said reference to estimate a likelihood that the reported amount differs from an amount of fuel actually dispensed.

37. The central station computer of claim 36 wherein said computer is further configured to determine the reference from results from a plurality of flow rates derived from multiple fueling transactions.

38. The central station computer of claim 36 wherein said computer is further configured to perform a plurality of comparisons during a single fueling transaction.

39. The central station computer of claim 36 wherein said reference is determined with historically created data generated by the fuel dispenser.

5 40. A computer remote from a fueling environment configured to detect fraud in a fuel dispenser wherein the fraud comprises reporting an amount of fuel differing from the amount of fuel actually dispensed in a fueling transaction, said computer configured to:

receive data related to a reported amount of fuel alleged to be dispensed on a fuel dispenser;

10 compare the data related to a reported amount to a reference related to a flow rate during fueling transactions; and

determine if the data related to a reported amount is within a confidence interval of said reference to estimate a likelihood that the reported amount differs from an amount of fuel actually dispensed.

15 41. The computer of claim 40 wherein the data related to a reported amount of fuel alleged to be dispensed on a fuel dispenser comprises a fueling environment average.

20 42. The computer of claim 40 wherein the data related to a reported amount of fuel alleged to be dispensed on a fuel dispenser comprises an average reported amount from a single fuel dispenser accumulated over a plurality of fueling transactions.

43. The computer of claim 40 wherein said reference is determined by comparing data from a plurality of fueling environments.

44. The computer of claim 40 wherein said computer is configured to generate an alarm if said computer does not receive the data.

45. A fuel dispenser configured to detect fraud in a fueling transaction wherein the fraud comprises reporting an amount of fuel differing from the amount of fuel actually dispensed in a fueling transaction, said fuel dispenser comprising:

- a) a fuel delivery path to deliver fuel to a vehicle;
- b) a user interface for reporting an amount of fuel allegedly dispensed; and
- c) a control system for controlling said fuel delivery path, wherein said control system exports data relating to a flow rate of fuel dispensed through said fuel delivery path from which a reference may be derived and data relating to an amount of fuel allegedly dispensed for comparison by a device remote from the fuel dispenser, said comparison between said reference and said reported amount of fuel alleged to be dispensed through the fuel delivery path during the fueling transaction and wherein said device remote from the fuel dispenser determines if the reported amount is within a confidence interval of said reference to estimate a likelihood that the reported amount differs from the amount of fuel actually dispensed.

46. A computer readable medium including software to determine inferentially if fraud is being perpetrated at a fuel dispenser, wherein the fraud comprises reporting to a consumer an amount of fuel alleged to be dispensed that differs from an amount of fuel actually dispensed in a fueling

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